

**REMARKS:**

These amendments and remarks are filed in response to an office action dated June 9, 2006. Claims 1-41 are pending in the application. Claims 1-41 are rejected. Claims 16, 26, and 31 are amended. This substitute response includes revised amendments to claims 16, 26, and 31.

Claims 16, 26, and 31 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claims 16, 26, and 31 are amended. Support for the amendment is found in paragraph [0050] of the published application, United States Patent Application Publication Number 2005/0197508, which teaches that DME can be added to the system in a variety of ways, including the direct addition of DME. As a result of these amendments, the Applicants respectfully assert that this rejection has been overcome.

Claims 1-4, 6-8, 10-12, 14-20, 22-27, 29-31, 33-37, and 39-41 are rejected under 35 U.S.C. § 103(a) as unpatentable over United States Patent Number 6,143,930 (*Singh*) in view of Organic Chemistry Laboratory II, Chemistry 3712/3612, Spring 2003, Department of Chemistry and Biochemistry, University of Arkansas (*Allison*). Applicants respectfully traverse the rejection. Claims 16, 26, and 31, as previously indicated, have been amended.

Initially, as the Examiner indicates, *Singh* does not perform two consecutive extraction steps. *Singh* also does not teach other elements of independent claims 1, 17, and 30. *Singh* does not teach a second overhead stream comprising dimethyl ether. Additionally, *Singh* does not teach forming dimethyl ether in the distillation column. The Examiner's position is apparently based on the statement "[a]ccording to the applicant, dimethyl ether is formed when water is *added* to the distillation column." (Office Action at page 4, (emphasis added)). The Examiner cites page 33, lines 10-11 of the pending specification. Applicants can not identify the cited passage as described but assume that the Examiner is referring to paragraph [0050] of the published application. The Examiner states that *Singh* teaches that water is already present in the distillation column, but this is not the same as adding additional water to the distillation column as disclosed in paragraph [0050]. The present invention discloses advantages obtained by *adding* DME to the feed to the extractor. Most importantly, *Singh* does not disclose forming DME, does not recognize benefits of having DME present during the extraction, and does not disclose procedures for causing the formation of DME. *Singh* neither teaches nor suggests the recited

claim elements. For these reasons alone, the Applicants respectfully assert the rejection is improper and should be withdrawn.

Additionally, *Allison* does not disclose these missing elements. *Allison* does not teach reduction and/or removal of permanganate-reducing compounds. Also, *Allison* does not form a second overhead stream comprising methyl iodide, dimethyl ether, and at least one permanganate-reducing compound. The Examiner also asserts that combining the *Singh* and *Allison* references is obvious because one skilled in the art would perform multiple extractions on any separation process. However, no motivation or suggestion is provided by either reference to combine an extraction method from *Singh* with multiple extractions of *Allison*. Indeed, the pending specification explains how the addition of a second extraction is not obvious because each extraction also requires solvent, equipment, and energy expenditures. The specification also explains how each extraction also leads to loss of a desirable component, methyl iodide, and that, for example, the amount of methyl iodide in the aqueous extract dropped from 1.8 percent when no DME was present to 0.5 percent when DME was present. (See paragraph [0050]). By contrast, *Singh* discloses a methyl iodide concentration of 2 percent in the aqueous extract. (See column 5, lines 2-3). This further demonstrates that *Singh* neither teaches the presence of DME nor suggest any benefit to its presence. The present specification explains how these problems can be overcome by means of the present invention. Using the Applicant's specification to provide motivation to combine references is an unacceptable use of hindsight and emphasizes the nonobviousness of the current invention.

*Singh* and *Allison*, alone or in combination, do not teach, show, or suggest the steps of (a) distilling at least a portion of the first overhead to produce a second overhead stream comprising methyl iodide, dimethyl ether, and said at least one PRC, (b) extracting the second overhead stream with water to form a first raffinate and a first aqueous extract stream containing said at least one PRC, and (c) extracting the first raffinate with water to form a second raffinate and a second aqueous extract stream containing said at least one PRC, as recited in claim 1 and claims 2-4, 6-8, 10-12, and 14-16 dependent thereon.

Also, *Singh* and *Allison*, alone or in combination, do not teach, show, or suggest (a) carbonylating at least one reactant selected from the group consisting of methanol, methyl acetate, methyl formate and dimethyl ether in a reactor containing a suitable reaction medium

comprising an organic iodide, (b) separating the products of said carbonylation into a volatile product phase comprising acetic acid, and a less volatile phase, (c) distilling said volatile product phase to yield a purified acetic acid product and a first overhead comprising said organic iodide and at least one permanganate reducing compound (PRC), (d) distilling at least a portion of the first overhead to produce a PRC-enriched second overhead, said second overhead further comprising dimethyl ether, and (e) extracting the second overhead with water, wherein step (e) comprises at least two consecutive extraction steps, each extraction step comprising contacting the second overhead with water and separating therefrom an aqueous stream comprising said at least one PRC, as recited in claim 17 and claims 18-20, 22-27, and 29 dependent thereon.

Additionally, *Singh* and *Allison*, alone or in combination, do not teach, show, or suggest distilling the mixture to separate the mixture into a plurality of streams, at least one of said streams being a PRC enriched overhead stream comprising dimethyl ether; and extracting the PRC enriched overhead stream with water, wherein step (b) comprises at least two consecutive extraction steps, each extraction step comprising contacting the PRC enriched overhead stream with water and separating therefrom an aqueous stream comprising said at least one PRC, as recited in claim 30 and claims 31, 33-37, and 39-41 dependent thereon. Withdrawal of the rejection is respectfully requested.

Claims 1-41 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as unpatentable over claims 1-36 of United States Patent Application Number 10/708,421 in view of *Allison*. While not commenting on the applicability of *Allison*, Applicants have enclosed a provisional terminal disclaimer. Withdrawal of the provisional rejection is respectfully requested.

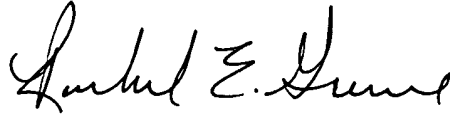
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Applicants believe that the present pending claims are in condition for allowance. Applicants respectfully request that the Examiner reconsider the rejection of the pending claims in light of the above analysis.

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In order to facilitate the resolution of any questions presented by this paper, Applicants request that the Examiner directly contact the undersigned attorney by telephone at 713-787-1595 to further the discussion, reconsideration, and allowance of the claims.

Respectfully submitted,



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9/18, 2006